Notice of Allowability	Application No.	Applicant(s)	
	10/714,001	TSAI ET AL.	
	Examiner	Art Unit	
	Thanhha Pham	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *01/12/2006 and phone interview 01/20/2006*.

2. ☒ The allowed claim(s) is/are *1 and 3-20*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Thanhha Pham

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment to claims 4 and 9 to correct antecedent basis was given in a telephone interview with Nelson Quintero on 01/20/2006. Amendments to correct the claim status identifiers of claims 18 and 19 are also made by Examiner according to MPEP 1302.04

The application has been amended as follows:

- In claim 4,

  line 20, change "metal/metal compound" to – Ti/TiSi –

- In claim 9,

  line 1, change "claim 2" to – claim 3 –

- In claim 18,

  line 1, change "(original)" to – (previously presented) –

- In claim 19,

  line 1, change "(original)" to – (previously presented) –

Allowable Subject Matter

2. Claims 1 and 3-20 are allowed.

3. The following is an examiner's statement of reasons for allowance:

► Recorded Prior Art fails to disclose or suggest the combination of the process steps of forming a bit line contact via as cited in the base claim 1 including forming a conductive layer overlying the drain region wherein the top surface of the conductive layer is lower than that of the gate electrode, wherein forming the conductive layer further comprises: blanketly forming a layer of conductive material overlying the substrate; removing a portion of the conductive material layer, leaving the conductive layer overlying the drain region and source region wherein the top surface of the conductive layer is lower than that of the gate electrode; forming a patterned resist layer exposing the conductive layer overlying the source region; removing the exposed conductive layer using the patterned resist layer as a mask; and removing the patterned resist layer.

► Recorded Prior Art fails to disclose or suggest the combination of the process steps of forming a bit line contact via as cited in the base claim 3 including forming a conductive layer overlying the drain region wherein the top surface of the conductive layer is lower than that of the gate electrode, wherein forming the conductive layer further comprises: conformally forming a metal/metal compound layer overlying the substrate; blanketly forming a layer of conductive material overlying the substrate; removing a portion of the conductive material layer, leaving the conductive layer overlying the drain region and source region wherein the top surface of the conductive layer is lower than that of the gate electrode; forming a patterned resist layer exposing the conductive layer overlying the source region; removing the exposed conductive layer using the patterned resist layer as a mask and the metal/metal compound layer as

a stop layer, thereby exposing the metal/metal compound layer overlying the source region; and removing the patterned resist layer and exposed metal/metal compound layer.

► Recorded Prior Art fails to disclose or suggest the combination of the process steps of forming a bit line contact via as cited in the base claim 4 including forming a conductive layer overlying the drain region wherein the top surface of the conductive layer is lower than that of the gate electrode, wherein forming the conductive layer further comprises: conformally forming a Ti/TiSi layer overlying the substrate; blanketly forming a layer of conductive material overlying the substrate; removing a portion of the conductive material layer, leaving the conductive layer overlying the drain region and source region wherein the top surface of the conductive layer is lower than that of the gate electrode; forming a patterned resist layer exposing the conductive layer overlying the source region; removing the exposed conductive layer using the patterned resist layer as a mask and the Ti/TiSi layer as a stop layer, thereby exposing the Ti/TiSi layer overlying the source region; ashing the patterned resist layer using oxygen plasma and removing the exposed Ti/TiSi layer using SPM (sulfuric acid hydrogen peroxide mixture) and APM (ammonium hydrogen peroxide mixture).

► Recorded Prior Art fails to disclose the combination of the process steps of forming a bit line contact via as cited in the base claim 12 including: removing the unwanted conductive layer and doped polycrystalline silicon layer, leaving the doped polycrystalline layer thinner than the gate electrode, overlying the drain region, and the conductive layer covered by the doped polycrystalline silicon layer; conformally forming

an insulating barrier layer overlying the substrate; blanketly forming a dielectric layer overlying the insulating barrier layer; and forming a via through the dielectric layer and insulating barrier layer, exposing the doped polycrystalline silicon layer.

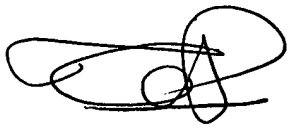
► Recorded Prior Art fails to disclose or suggest the combination of the process steps of forming a bit line contact via as cited in the base claim 20 including removing a part of the doped polycrystalline silicon layer leaving the doped polycrystalline silicon layer thinner than the gate electrode, overlying the drain region and source region; forming a patterned resist layer exposing the doped polycrystalline silicon layer overlying the source region; removing the exposed doped polycrystalline silicon layer using the patterned resist layer as a mask and the Ti/TiSi layer as a stop layer, thereby exposing the Ti/TiSi layer overlying the source region; ashing the patterned resist layer using oxygen plasma; and removing the exposed Ti/TiSi layer using SPM (sulfuric acid hydrogen peroxide mixture) and APM (ammonium hydrogen peroxide mixture).

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanhha Pham whose telephone number is (571) 272-1696. The examiner can normally be reached on Monday and Thursday 9:00AM - 9:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Thanhha Pham